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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TITLE: DEVICE AND METHOD FOR ANALYSIS OF SAMPLES USING A
COMBINED SAMPLE TREATMENT AND SAMPLE CARRIER
DEVICE

AMENDED CLAIMS

1. (currently amended) A device for combined sample treatment and sample carrying, comprising a plate with inlets at one side connected to respective compartments situated at respective array positions for receiving samples to be treated and analysed, ~~characterised in that~~ wherein each compartment is in communication with an outlet enabling fluid flow through the compartment.
2. (currently amended) A device according to claim 1, ~~characterised in that~~ wherein the respective outlet simultaneously serves as a restriction for retaining a medium.
3. (currently amended) A device according to claim 1, ~~characterised in that~~ wherein the respective outlet comprises a restriction for retaining a medium.
4. (currently amended) A device according to claim 3, ~~characterised in that~~ wherein the outlet comprises a structure with restriction apertures (106').
5. (currently amended) A device according to claim 3, ~~characterised in that~~ wherein the outlet comprises a permeable membrane (504).
6. (currently amended) A device according to claim 1, ~~characterised in that~~ wherein the outlet is arranged at the other side of the plate opposite the inlet, wherein the respective compartment is formed between the inlet and the outlet.
7. (cancelled)

8. (currently amended) A device according to ~~any one of claims 1 to 5,~~
~~characterised in that~~ claim 1, wherein the outlet is arranged at the other side of the plate displaced from the inlet, wherein the respective compartment is formed between the inlet and the outlet.
9. (currently amended) A device according to claim 1, ~~characterised in that~~
wherein the outlet is arranged at the same side of the plate displaced from the inlet, wherein the respective compartment is formed between the inlet and the outlet.
10. (currently amended) A device according to claim 8 or 9, ~~characterised in that~~
wherein the respective compartment is formed as a channel directed in the same plane as the plate.
11. (currently amended) A device according to claim 10, ~~characterised in that~~
wherein the respective compartment comprises a restriction for retaining a medium.
12. (currently amended) A device according to claim 11, ~~characterised in that~~
wherein the restriction comprises a grid.
13. (cancelled)
14. (cancelled)
15. (currently amended) A device according to ~~any one of claims 1 to 14,~~
~~characterised in that~~ claim 1, wherein the respective inlet comprises a structure, such as bars (109), for hindering matter to enter the compartment.
16. (currently amended) A device according to ~~any one of claims 1 to 15,~~
~~characterised in that~~ claim 1, wherein an analysis zone is arranged at each outlet.

17. (currently amended) A device according to claim 16, ~~characterised in that~~
wherein the analysis zone is structured to achieve a well defined analysis area.
18. (cancelled)
19. (currently amended) A device according to claim 17, ~~characterised in that~~
wherein the analysis zone structure comprises a patterned structure, such as a hydrophilic layer (614) or a hydrophobic layer (613), or a nanoporous surface (614) or a planar surface (613) or a combination thereof.
20. (currently amended) A device according to ~~any one of claims 1 to 19,~~
~~characterised in that~~ claim 1, wherein a structured zone (615) is arranged at each inlet.
21. (cancelled)
22. (currently amended) A device according to claim 20, ~~characterised in that~~
wherein the structured zone comprises a patterned structure, such as a hydrophilic layer (614) or a hydrophobic layer (613), or a nanoporous surface (614) or a planar surface (613) or a combination thereof.
23. (currently amended) A device according to ~~any one of claims 1 to 19,~~
~~characterised in that~~ claim 1, wherein one or both of the sides of the device is made hydrophobic.
24. (cancelled)
25. (cancelled)
26. (cancelled)

27. (currently amended) A device according to ~~any one of the preceding claims,~~
~~characterised in that~~ claim 1, wherein the device is arranged to generate
 electrospray.

28. (currently amended) A device according to claim 27, ~~characterised in that~~
~~wherein~~ the device comprises a nozzle ~~(1411, 1502)~~ at each outlet, and an electrode
~~(1413, 1504)~~ at each compartment.

29. (currently amended) A device according to claim 28, ~~characterised in that~~
~~wherein~~ the nozzle is in the form of a pyramidal nozzle, a cylindrical nozzle or a
 conical nozzle.

30. (cancelled)

31. (cancelled)

32. (cancelled)

33. (original) A method for analysis of samples using a combined sample
 treatment and sample carrier device comprising a plate with inlets at one side
 connected to respective compartments situated at respective array positions for
 receiving samples to be treated and analysed, each compartment being in
 communication with an outlet enabling fluid flow through the compartment
 comprising the steps of:

supplying an external container with a sample;

optionally, subjecting the sample to a first treatment in the external container;

transferring the sample to the combined sample treatment and sample carrier
 device;

subjecting the sample to a second treatment exploiting fluid flow through the
 device, wherein a medium is trapped in the device.

34. (cancelled)

35. (cancelled)

36. (cancelled)

37. (currently amended) A method according to ~~any one of claims 33 to 36,~~
~~characterised in that~~ claim 33, wherein the second treatment comprises washing,
wherein a washing solution is drawn through the combined sample treatment and
sample carrier device.

38. (currently amended) A method according to ~~any one of claims 33 to 37,~~
~~characterised in that~~ claim 33, wherein the second treatment comprises elution,
wherein an elution solution is drawn through the combined sample treatment and
sample carrier device.

39. (currently amended) A method according to ~~any one of claims 33 to 38,~~
~~characterised in that~~ claim 33, wherein the second treatment comprises transferring
the sample to an analysis zone on the combined sample treatment and sample
carrier device.

40. (currently amended) A method according to ~~any one of claims 33 to 39,~~
~~characterised in that~~ claim 33, wherein the sample is drawn through the combined
sample treatment and sample carrier device to the analysis zone.

41. (currently amended) A method according to claim 39 ~~or 40,~~ ~~characterised in~~
~~that~~ wherein the sample is subjected to crystallisation in the analysis zone.

42. (currently amended) A method according to claim 41, ~~characterised in that~~
wherein the sample is drawn through the combined sample treatment and sample
carrier device to the analysis zone with a solution containing a matrix for LDI, such
as DHB, CHCA, FA, SA and THAP.

43. (currently amended) A method according to ~~any one of claims 39 to 42,~~
~~characterised in that~~ claim 39, wherein the analysis zone is situated on the
underside, and the combined sample treatment and sample carrier device is turned

upside down for subjecting said plate to an analysis instrument.

44. (currently amended) A method according to ~~any one of claims 33 to 38,~~
~~characterised in that~~ claim 33, wherein the second treatment comprises
electrospraying the sample to an analysis instrument.

45. (currently amended) A method according to ~~any one of claims 33 to 44,~~
~~characterised in that~~ claim 33, wherein the combined sample treatment and sample
carrier device is placed in a suction fixture that is operated to aspirate fluid through
the device as and when required in the respective steps.

46. (currently amended) A method according to ~~any one of claims 34 to 45,~~
~~characterised in that~~ claim 34, wherein the medium has a selective affinity for
various biomolecules.

47. (currently amended) A method according to claim 46, ~~characterised in that~~
wherein the medium has hydrophilic, hydrophobic, cation exchange, RP, SCX, IMAC
or IEX functionality.

48. (currently amended) A method according to claim 46 ~~or 47,~~ ~~characterised in~~
~~that~~ wherein the medium comprises beads, particles, membranes or Empore disc
pieces.

49. (currently amended) A method according to ~~any one of claims 46 to 48,~~
~~characterised in that~~ claim 46, wherein the medium is supplied to the combined
sample treatment and carrier plate by in-situ (in-chip) polymerisation, such as a
medium of porous polymer monolith.

50. (currently amended) A method according to ~~any one of claims 33 to 49,~~
~~characterised in that~~ claim 33, wherein the combined sample treatment and sample
carrier device comprises several stacked plates.

51. (currently amended) A method according to claim 50, ~~characterised in that~~ wherein different media are carried by the different plates.
52. (currently amended) A method according to claim 51, ~~characterised in that~~ wherein the second treatment is performed simultaneously in the stacked plates.
53. (currently amended) A method according to claim 51, ~~characterised in that~~ wherein that part of the second treatment is performed simultaneously in the stacked plates, and then the stack is disassembled for separate treatment of the plates.
54. (currently amended) A method according to ~~any one of claims 33 to 53,~~ ~~characterised in that~~ claim 33, wherein the combined sample treatment and sample carrier device after the second treatment is subjected to analysis.
55. (currently amended) A method according to claim 54, ~~characterised in that~~ wherein the analysis is optical, such as fluorescence detection, laser detection, scintillation detection or microscopy.
56. (currently amended) A method according to claim 54, ~~characterised in that~~ wherein the analysis comprises mass spectroscopy (MS), such as LDI, ESI, SELDI, DIOS, MALDI TOF-TOF, MALDI Q-TOF.
57. (currently amended) A method according to ~~any one of claims 33 to 56,~~ ~~characterised in that~~ claim 33, wherein the second treatment comprises treatment with reagents for enzymatic or chemical reactions.
58. (cancelled)
59. (cancelled)
60. (cancelled)
61. (cancelled)

62. (cancelled)
63. (new) A device according to claim 9, wherein the respective compartment is formed as a channel directed in the same plane as the plate.
64. (new) A device according to claim 63, wherein the respective compartment comprises a restriction for retaining a medium.
65. (new) A device according to claim 64, wherein the restriction comprises a grid.
66. (new) A method according to claim 40, wherein the sample is subjected to crystallisation in the analysis zone.
67. (new) A method according to claim 66, wherein the sample is drawn through the combined sample treatment and sample carrier device to the analysis zone with a solution containing a matrix for LDI, such as DHB, CHCA, FA, SA and THAP
68. (new) A method according to claim 40, wherein the analysis zone is situated on the underside, and the combined sample treatment and sample carrier device is turned upside down for subjecting said plate to an analysis instrument.